

Climate Smart Farming Tools: Helping NE Producers Reduce Climate Risk on Farms

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Cornell Institute for Climate Smart Solutions

USDA NE Climate Hub Partners Meeting
Rutgers University – March 14, 2018



NE: Avg Farm Size MA = 68 acres

NE Context Matters:

- Varying Landscapes
- Diversity of Farm Types, Sizes and Crops
- Different Climate Signals



SE: Avg Farm Size GA: 228 acres



MW: Avg. Farm Size
Kansas = 747 acres



MW: U2U
 SE: AgroClimate
 NE: ClimateSmartFarming

CSF
 Climate Smart Farming
 A program of Cornell University

news about us contact

Powerful and user-friendly climate tools for farmers in the Northeast

How is the changing climate affecting your farm?

Climate Smart Farming Decision Tools
 Cutting-edge tools to help farmers manage climate risk.

See more Tools

CSF Growing Degree Day Calculator
 Grape Hardiness & Freeze Risk
 CSF Irrigation Scheduler
 Climate Normals - Northeast Regional Climate Center



AgClimate Viewer • Climate Patterns Viewer • Corn GDD • Corn Split N • Irrigation Investment • ↑

U2U@MRCC: Corn GDD

GDD Start: April 5 Comparison Years: Choose a Year Corn Maturity Days: 113 Sil

Freeze Temperature (°F): 28 Variation: All Years Current Day: Today Bla 27

Corn Growing Degree Day Tool

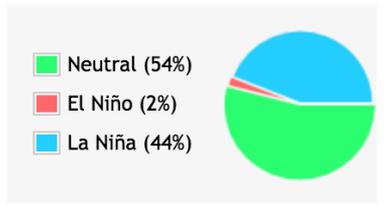
Location: 38.67, -98.74 in Russell Co., KS, Start Date: April 5, Maturity Days: 113, Freeze Temp: 28°F, Variation:



AgroClimate
 Tools for Managing Climate Risk in Agriculture

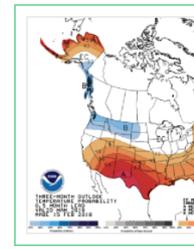
Home Tools

ENSO Forecast
 Climate Phase Forecast for the Next 3 Months



Provided by the International Research Institute for Climate and Society

Seasonal Forecast
 Seasonal forecast Center. How to re



Cornell Climate Smart Farming Program Goals

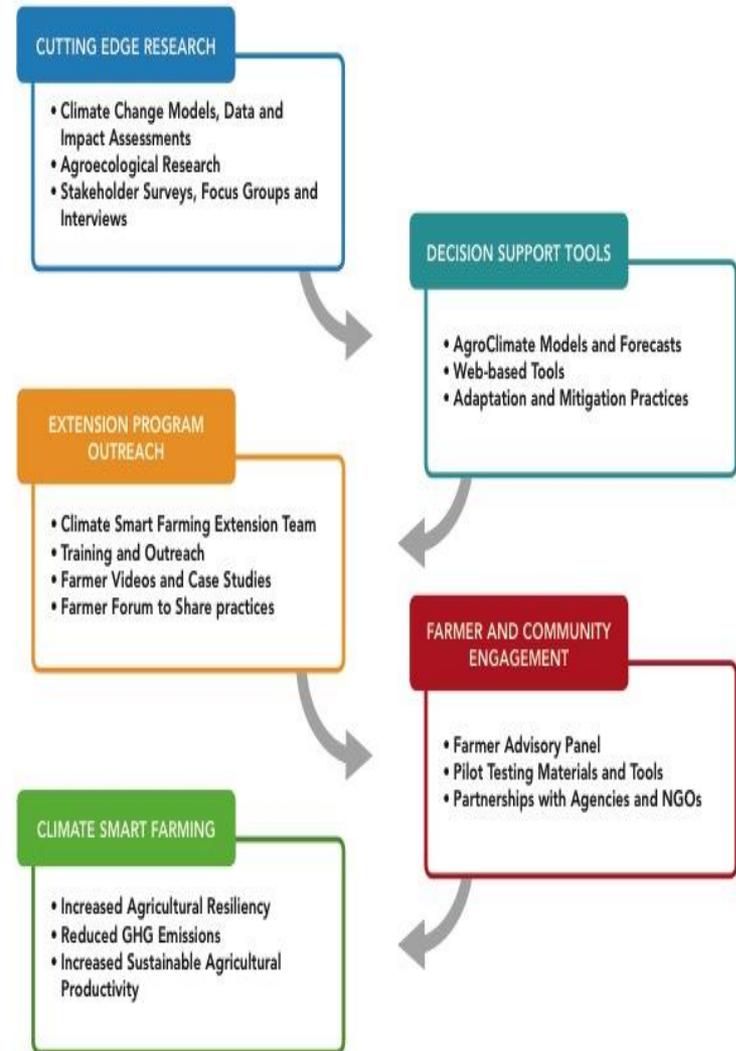


- Increase farm resiliency to extreme weather events, climate variability and change, through assessing risk & adopting BMPs (**adaptation**)
- Increase energy efficiency and renewable energy capacity to reduce GHG emissions and operating costs, and utilize BMPs (**mitigation**)
- Sustainably **increase agricultural productivity** and farming incomes, to contribute to regional & global **food security**

Stakeholder-Driven Research & Extension

Asking Farmers @ Impacts, Responses & Needs:

- Farmer Focus Groups in 2016 & 2017 with NY/PA producer groups & Consultants:
- Feedback from meetings and outreach events
- Farmer Surveys: Empire Farm Days 2017; NYS Farmer Survey: winter 2018
- 2,000 Farmers, Extension, Agency staff reached since 10/17





How is the changing climate affecting your farm?

- Decision Tools
- Resources
- Videos
- Extension: Links to NYS CSF Team & Each NE State
- 900 website hits per month

CSF Videos: Oechsner Farm



“A normal season does not seem like it happens any more. It’s either really dry, or really wet. It seems like when we get rain, it’s apocalyptic...We got 5 inches of rain in about 1.5 hours, and I had a lot of soil loss...I see the impact for generations.”

<http://climatesmartfarming.org/videos/oechsner-farm/>

CSF Tools

Current Location:
Hamilton, NY 13346

Change Location 

Soil Water Capacity

Medium (Loam, m... 

Crop Type 

Grass Reference 

Planting/Budbreak

04/05/2017 

Last Irrigation Date

NONE 

 Season to Date

 30-Day Outlook

 Climate Change

 Info

- Data (NRCC):
 - 4X4 KM gridded climate data
 - NWS forecasts
 - Agricultural models
- Farmer Input:
 - Location: Any farm location in NE, WVA to ME, save multiple locations
 - Planting Date, Crop
 - Choose Season to Date, Last Season, Seasonal Outlook
 - Climate Change Context: Coming Soon
 - Info: Meta Data behind the tools

Growing Degree Day Tool

CSF Growing Degree Day Calculator

Climate

Tools

Team

Resources

Videos

Current Location:
Waterville, ME

Change Location

Planting Date:

05/10/2017

GDD Threshold

- Base 50
- Base 8650

Viewing results from 2017.

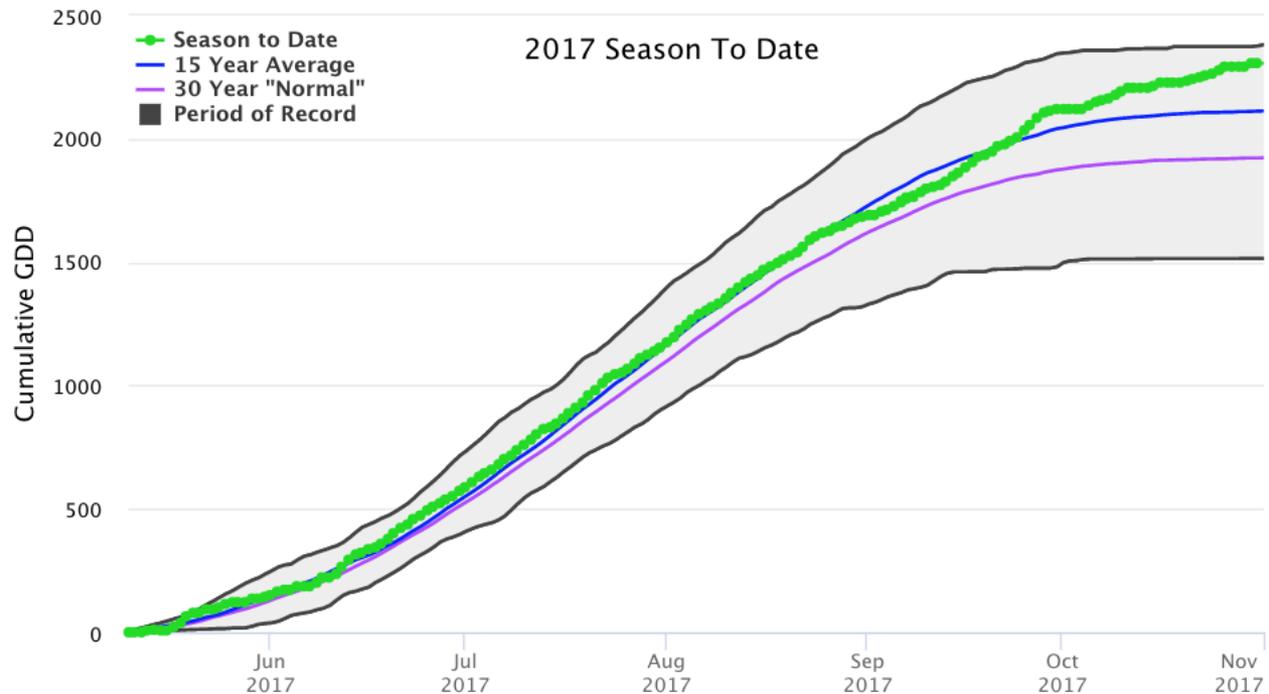
Season To Date

Season Outlook

Climate Change

Info

Cumulative Base 50 Growing Degree Days @ Waterville, ME



Powered by NRCC

Water Deficit Calculator

CSF Water Deficit Calculator

Climate

Tools

Team

Resources

Videos

Current Location:
College Park, MD

Change Location

Soil Water Capacity

Medium (Loam, m...)

Crop Type

Vegetables (Small...)

Planting/Budbreak

04/12/2017

Last Irrigation Date

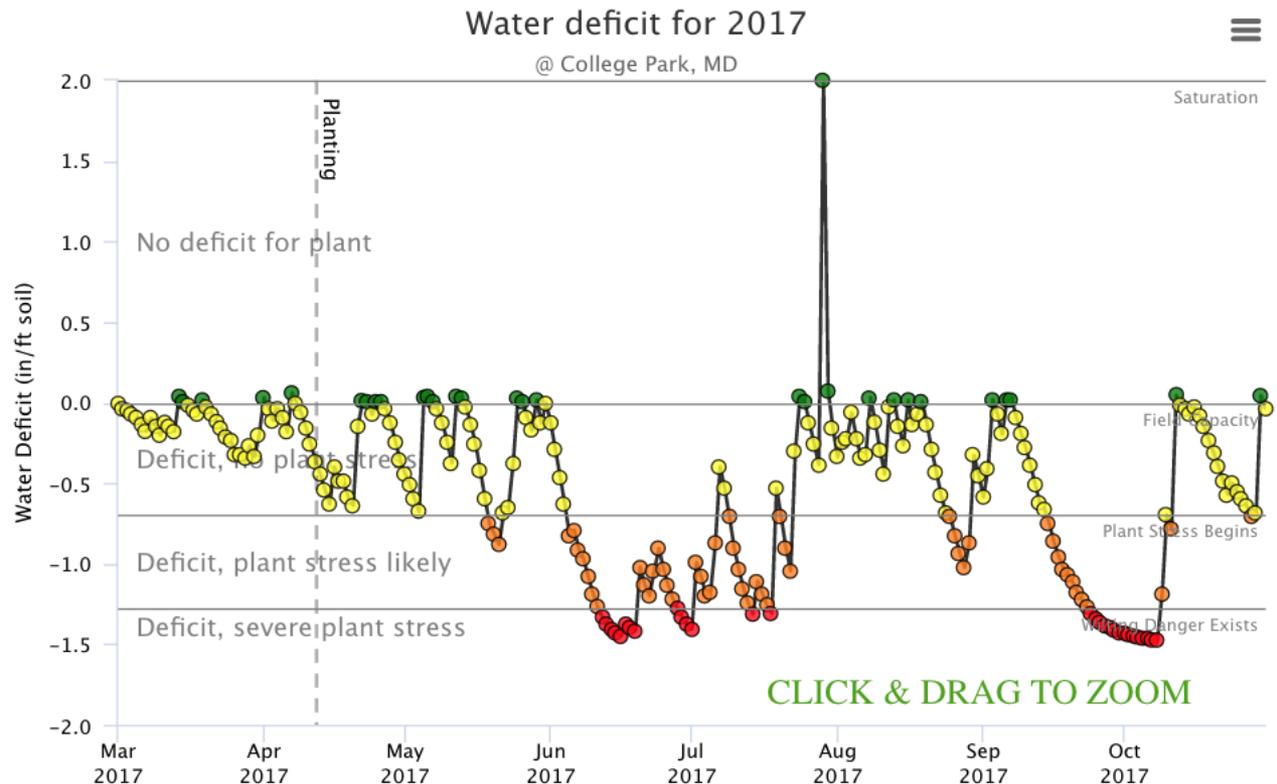
NONE

Season to Date

30-Day Outlook

Climate Change

Info



Apple & Grape Freeze Risk Tools

Current Location :
 Johnny Appleseed's Orchard
 DeMunn Rd, Beaver Dams, NY
 Latitude : 42.282480
 Longitude : -76.934862

Change Location

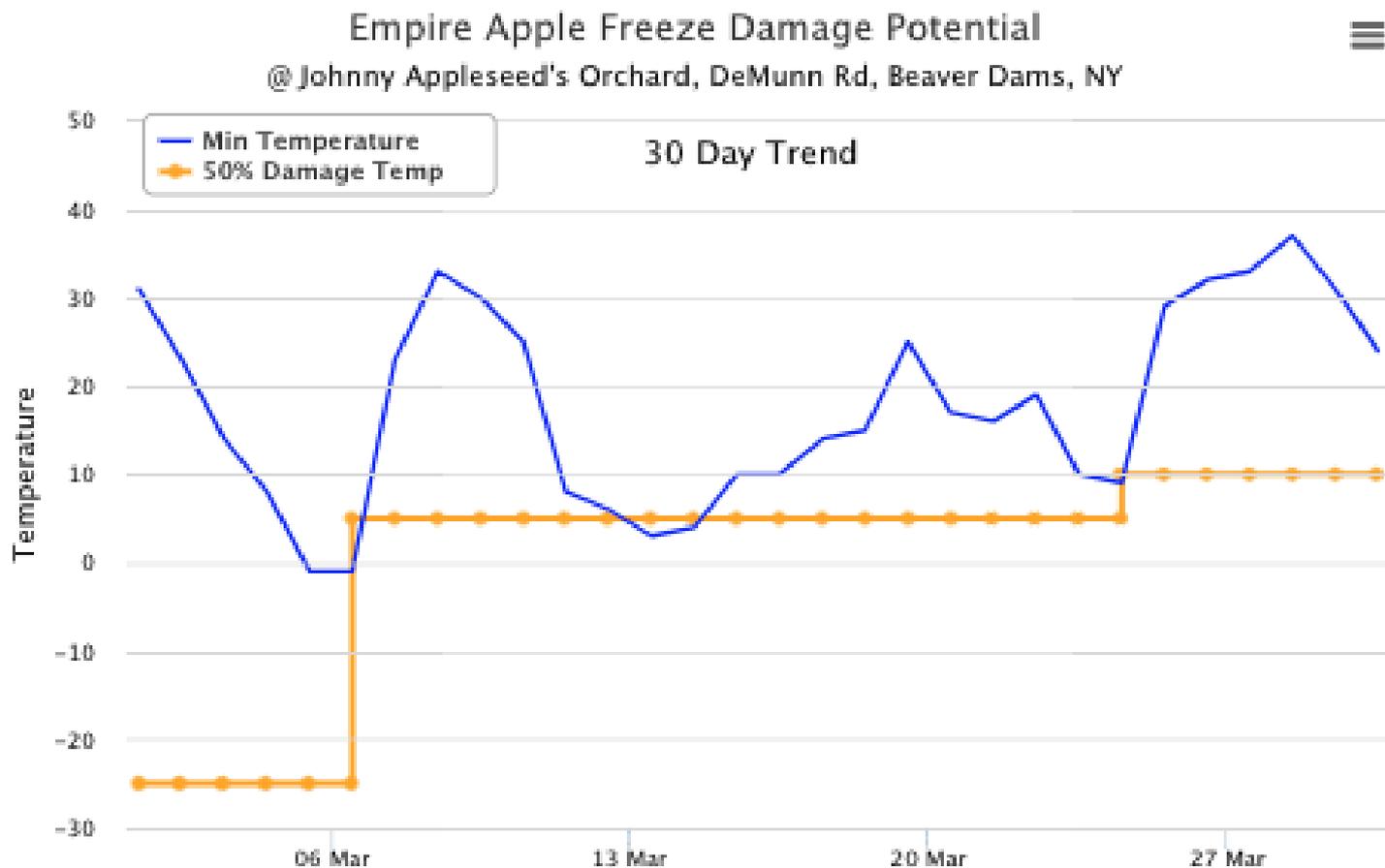
Date of Interest:

2017-03-15

Apple Variety

- Empire
- McIntosh
- Red Delicious

Full Season



Powered by NRCC

Cover Crop Scheduler

CSF Winter Cover Crop Planting Scheduler

Climate

Tools

Team

Resources

Forum

Videos

Location 

Richfield Springs, NY
13439
Lat/Lon: 42.85, -74.99

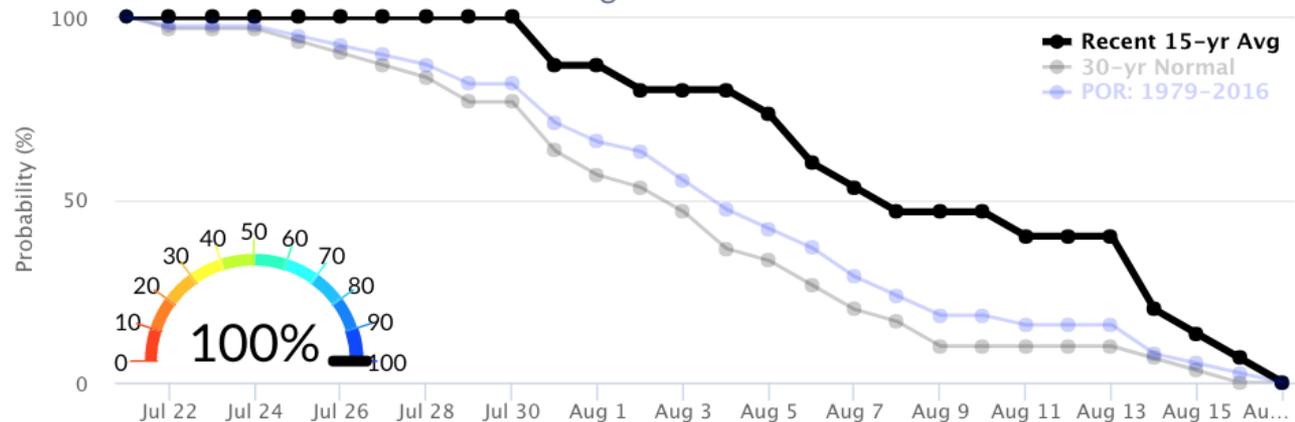
Cover Crop

Buckwheat

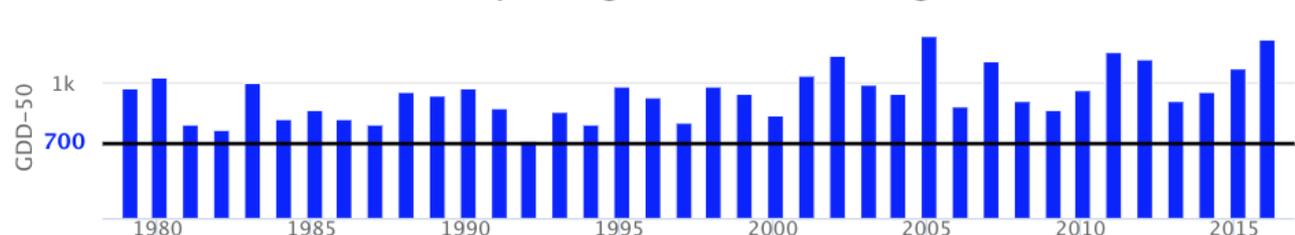
Data Info

Probability of biomass > 1 ton/acre before hard freeze (Buckwheat)

Planting Date: 07/21



GDDs (base 50) from planting date (07/21) through hard freeze



Seasonal Forecasts: Spring Forecasting 2018

ECRL Springcasting

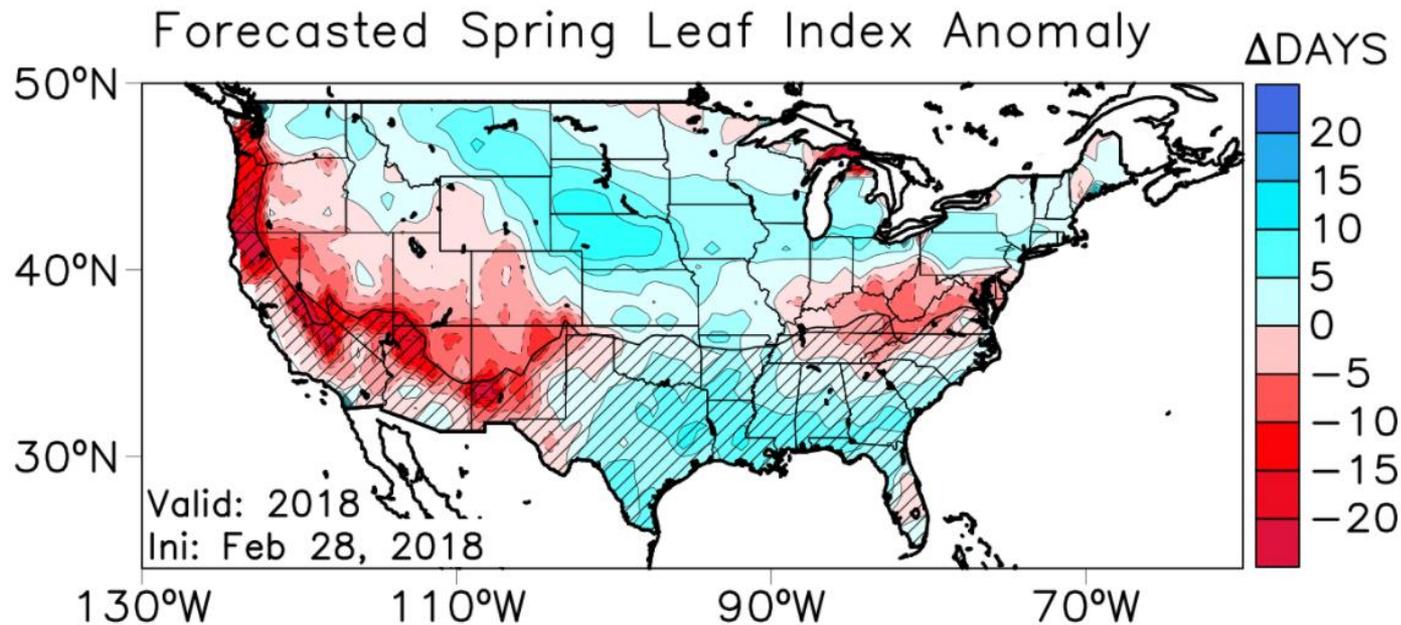
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- Predicts spring onset weeks to months in advance by focusing on the timing of spring indicators
- Spring onset dates; spring onset anomalies (days “early” or “late” compared to 1981-2010)

Seasonal Forecasts: NY/NE Drought Atlas

CSF New York State / Northeast Drought Atlas

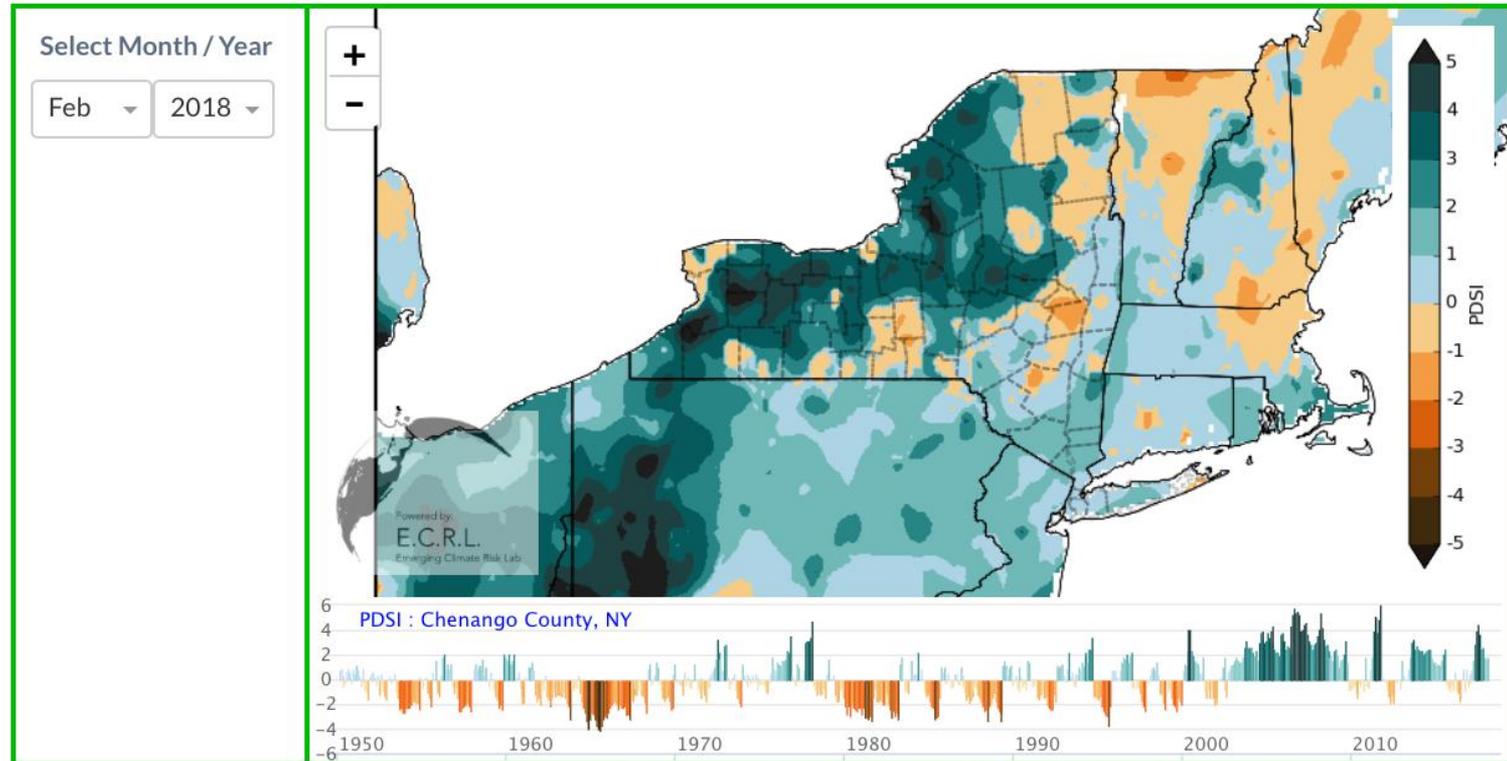
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© Cornell University, 2017. Credits: Tool Developed by Dr. Toby Ault. Web development by Brian Belcher.

- Maps Palmer Drought Severity Index, updated every month
- Experimental forecasts in development

Key Takeaways

- Data/Hosting: Partnering with the NRCC
 - U2U now hosted by MRCC
- Farmer input: Trainings, Focus Groups, Surveys
- Extension: Key to getting tools out to farmers (*NOT “build it and they will come”*)
- Funding: CSF small foundations & Hatch dollars, but need for core funding for development and maintenance of tools/sites
- Integration/Partnerships: across land grants and regions

Climate Smart Farming Program:



www.climatesmartfarming.org

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Thank You! Questions?



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